Space Weather Forecast

Issued on Thursday, 07 March 2024 at 00:47 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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The planned NOAA SWPC data outage on 6th March between 1600 UTC and 2200 UTC has been postponed until further notice. This was due to impact most of our observational data feeds and some models.
https://www.swpc.noaa.gov/news/postponement-planned-network-outage

Space Weather Forecast Headline: Chance of G1/Minor Storms on day 2 (08 Mar) given likely faster solar wind arrival and possible glancing blow from a coronal mass ejection.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low solar activity throughout. There are eight sunspot regions on the visible disc, with one of the larger regions approaching the western limb. remains approaching centre disk continue to be the most magnetically complex, with continued slight development. The remaining regions small and generally stable.

Modelling ongoing for a CME from the southeast disk on the 05 Mar, this is currently expected to largely pass below Earth's orbit but may give a glancing blow later on day 2 (08 Mar).

Solar Wind / Geomagnetic Activity: Solar wind parameters were originally slightly elevated at around 400-450km/s, before falling largely to slow-ambient levels 360-390 km/s around 06/1200UTC. Total magnetic field strength has been weak throughout. The north-south component has also varied weakly. Geomagnetic activity was mostly quiet (Kp0-2) with a brief interlude of unsettled (Kp3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Expected to remain generally low with a slight chance of an isolated Moderate class flare.

Solar Wind / Geomagnetic Activity: A coronal mass ejection (CME) was observed to depart the southwest of the Sun on the 03 Mar and may glance the Earth with impacts possible early on day 1 (07 Mar), although this is low confidence. A further CME, this time from the southeast was observed on the 05 March and may give a glancing blow on day 2 (08 Mar). A faster solar wind is then forecast to connect with Earth into day 2 (08 Mar) and persist into day 3 (09 Mar), perhaps reaching elevated levels. Generally Quiet to Unsettled geomagnetic activity is forecast to continue during days 1 (07 Mar), with a chance of Active intervals and a slight chance of a G1/Minor Storm at first given the potential for glancing CME influence. Into day 2 (08 Mar) generally Unsettled conditions expected with Active intervals likely and a chance of G1/Minor Storm intervals in association with the arrival of the faster winds and potential further glancing CME influence, these conditions may continue into day 2 (09 Mar) before conditions likely ease into day 4 (10 Mar).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	30	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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